Space Weather Forecast

Issued on Saturday, 10 September 2022 at 01:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was low over the past 24 hours, with X-ray activity showing occasional low-magnitude common-class flares. The largest of these flares appeared to emanate from a small sunspot group in the Sun's northeast at 08/1711UTC. This was one of two main sunspot regions on the facing side in terms of magnetic complexity, with the other group also located in the northeast quadrant. All other groups are small and magnetically simple, with the most recent new group showing some minor spot emergence in a plage region near the southeastern limb.

Coronagraph imagery appeared to show a faint, slow, fairly wide possible CME from off the northwest of the solar disc. However, there is no obvious Earth sided source so this is uncertain and low confidence. Modelling is still being assessed for any possible Earth directed component, although no significant impacts are expected. There is no evidence of any other Earth-directed Coronal Mass Ejections (CMEs).

Solar Wind / Geomagnetic Activity: The solar wind was indicative of a very slowly waning 'coronal hole' fast wind regime.

The solar wind speed showed an erratic but gradual decreasing trend from Elevated to Slightly Elevated levels, with the number of particles comprising the wind and their tied magnetic field both within their normal background range. The north-south component of the field was more noteworthy, with alternating spells of northward and southward orientation. Geomagnetic activity was mostly Unsettled to Active during the first half of the UTC day, before becoming largely Quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed, with a very slight enhancement (substantially below S1) perhaps related to the western rearward-directed CME.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be largely low, but with a daily slight chance of becoming moderate with isolated Moderate-class flares, most likely from one of the two more complex front side regions mentioned above.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast. Residual influence at first from CH20/+ should continue to reduce through day 1 (10th), with solar winds expected to be slightly elevated to background for the forecast period. By the end of day 4 (13th) the small CH22/- could begin to enhance solar winds a little but this is low confidence. Geomagnetic activity is expected to be Quiet to Unsettled (Kp 3) at first, probably

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trending predominantly Quiet (Kp 0 to 2).

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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